

AMENDMENTS TO THE CLAIMS

The listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Currently Amended) A method of designing a molding die for molding an optical device having a desirable form optimized so as to yield a desirable wavefront aberration by using a plurality of optical parameters;

the method comprising the steps of:

designing by using at least the plurality of optical parameters, a temporary optical device for optimizing a form so as to exhibit the desirable wavefront aberration;

making, according to the optimized form of the optical device, a temporary molding die for molding the optical device;

molding a first temporary optical device by using the temporary molding die;

measuring a wavefront of thus molded first temporary optical device and calculating a plurality of wavefront aberration amount $[[\Delta]]$ amounts Δ_i for a plurality of divided wavefront areas of said measured wavefront of said molded first temporary optical device, where $i \geq 2$;

calculating a correction wavefront aberration amount $[[-\Delta]]$ amounts $-\Delta_i$ compensating for each of the wavefront aberration amount $[[\Delta]]$ amounts Δ_i ;

designing a second temporary optical device for optimizing a form so as to exhibit a wavefront aberration with the correction wavefront aberration amount $[[-\Delta]]$ amounts $-\Delta_i$ without using a table prepared beforehand which shows a relationship between a deviation of the wavefront aberration amount $[[\Delta]]$ and a deviation of the optical parameter; and

designing, according to the optimized form of the second temporary optical device, a normal molding die for molding a normal optical device.

2. (Previously Presented) A method according to claim 1, further comprising the steps of:
molding the normal optical device by using the normal molding die;

measuring a wavefront aberration of thus molded optical device and calculating the wavefront aberration amount; and

recalculating the correction wavefront aberration amount when the wavefront aberration amount has a value greater than a predetermined reference value, and repeating subsequent steps until the value of the wavefront aberration amount becomes the reference value or less.

3. (Previously Presented) A method according to claim 1, wherein the wavefront aberration amount and correction wavefront aberration amount are calculated based on measurements of an interferometer apparatus for measuring a transmitted wavefront.

4. (Canceled)

5. (Original) A method according to claim 1, wherein at least one surface of the optical device is an aspheric surface.

6. (Original) A method according to claim 1, wherein the optical device is a single lens, used for an optical pickup objective lens, having aspheric surfaces on both sides.

7. (Original) A method according to claim 1, wherein the molding die is used for press molding or injection molding.